

REMARKS

Please reconsider the application in view of the following remarks. Applicant thanks the Examiner for carefully considering the application.

Disposition of Claims

Claims 2-7 and 9-12 are pending in this application. Claims 2, 4, 6, and 9 are independent. The remaining claims depend, directly or indirectly, from claims 2 and 9.

Rejections under 35 U.S.C. § 102

Claims 2-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,257,442 ("Claycomb"). This rejection is respectfully traversed.

Independent claim 2 recites a drilling system for drilling a well bore into an earth formation, including drilling means for drilling a well bore, pumping means for pumping drilling fluid into the well bore during drilling, and a drilling fluid outlet system for retrieving drilling fluid from the well bore, said drilling fluid outlet system including choke means for choking the return flow of retrieved drilling fluid, and alternating means for alternating the flow direction through the choke means, wherein the drilling fluid outlet system comprises an inlet and an outlet, the choke means includes a first choke connection, and a second choke connection, and the alternating means connects the inlet alternatingly to the first or second choke connection and connects the outlet alternatingly to the second or first choke connection.

Independent claim 4 recites a drilling system drilling system for drilling a well bore into an earth formation, including drilling means for drilling a well bore, pumping means for pumping drilling fluid into the well bore during drilling, and a drilling fluid outlet system for retrieving drilling fluid from the well bore, the drilling fluid outlet system including a choke

means for choking the return flow of retrieved drilling fluid, and alternating means for alternating the flow direction through the choke means, wherein the alternating means comprise a four way valve, having four connections and wherein the connections are connected two by two.

Independent claim 6 recites a drilling system for drilling a well bore into an earth formation including drilling means for drilling a well bore, pumping means for pumping drilling fluid into the well bore during drilling, and a drilling fluid outlet system for retrieving drilling fluid from the well bore, said drilling fluid outlet system including a choke means for choking the return flow of retrieved drilling fluid, and alternating means for alternating the flow direction through the choke means, wherein the choking means comprise a bi-directional choke.

Embodiments of the present invention advantageously provide a drilling system that includes alternating means for alternating return flow through the choke means to clean and discharge debris from the choke means. In some embodiments, the alternating means may be actuated automatically, such that alternating of the flow is performed quickly. Thus, the drilling system of embodiments of the present invention may clean the choke means with minimum interruption of the flow of drilling fluid.

Claycomb discloses a choke for controlling a flow of mud that includes a hollow valve body, a valve seat, an encircling valve seat shoulder, a valve element with a face conforming to the valve seat, means for moving the valve element into a fully closed position relative to the valve seat, and inlet and outlet means communicating with the passage through the valve body. Claycomb further discloses a two-position valve (122) that is placed in line with an emergency hand powered high pressure oil pump (116) connected to a filter (118) and a line (120). The valve in Claycomb selectively provides mud flow to one of two or more chokes, as

shown in Figure 3. In particular, the valve may be positioned to provide mud flow to one choke, and should the choke fail, the valve may be moved to provide mud flow to a back-up choke. (See Claycomb, Col. 7, lines 37-51).

Claycomb is silent with respect to alternating means for alternating the *flow direction* of the return flow *through the choking means*, as required by independent claims 2 and 4. As discussed above, embodiments of the present invention advantageously provide a drilling system with a drilling fluid outlet system that provides means for alternating the direction of flow of a return flow through a choke means to clean or remove debris caught within the choke means. In other words, the direction of flow through the choke may be reversed, as described in paragraph [0031] of the publication of the instant application, Publication No. 2006/0086538. In contrast, Claycomb simply discloses use of a valve to redirect the mud flow from a first choke to a second choke.

Applicant respectfully notes that in order for a claim to be anticipated, “every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim.” *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001). In view of the above, Claycomb fails to teach or suggest all the limitations recited in independent claims 2 and 4, as required to support a rejection under §102. Thus, claims 2 and 4 are patentable over Claycomb. Dependent claims 3, 5, and 7 are patentable for at least the same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 9-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Claycomb. This rejection is respectfully traversed.

Independent claim 9 recites a method of drilling a well bore into an earth formation, including drilling the well bore by operating drilling means, pumping drilling fluid into the well bore during said drilling, and retrieving drilling fluid from the well bore in a drilling fluid outlet system, said drilling fluid outlet system including choke means for choking the return flow of retrieved drilling fluid, whereby the flow direction of retrieved drilling fluid through the choke means is alternated for flushing away any debris from the choke means.

As discussed above, Claycomb discloses a valve that selectively provides mud flow to one of two or more chokes, as shown in Figure 3. In particular, the valve may be positioned to provide mud flow to one choke, and should the choke fail, the valve may be moved to provide mud flow to a back-up choke. (See Claycomb, Col. 7, lines 37-51). However, Claycomb is silent with respect to a *flow direction* of retrieved drilling fluid through the choke means being *alternated* for flushing away any debris from the choke means, as required by independent 9. In contrast, Claycomb only discloses fluid flowing in one direction through the choke. As postulated by the Examiner on page 3 of the Action, the debris that may be trapped in the choke may be flushed with *new flow* of drilling fluid when the choke is opened, *i.e.*, flow in the same direction. Assuming *arguendo* that debris is flushed with this new flow, the *flow direction* of the drilling fluid through the choke of Claycomb is not alternated, as required by independent claim 9.

In view of the above, independent claim 9 is patentable over Claycomb. Dependent claims 10-12 are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Double Patenting

Claims 2-7 are provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-16 of co-pending Application No. 11/769,540.

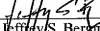
Pursuant to 37 C.F.R. §1.321, the undersigned encloses herewith a terminal disclaimer with respect to the application above, rendering this rejection moot. Accordingly, withdrawal of the provisional double patenting rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 17406/005001).

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Respectfully submitted,

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Attachments